

ABSTRACT OF THE DISCLOSURE

A variable cam timing phaser for an internal combustion engine having at least one camshaft comprising a housing, a rotor, a spool valve, and a recirculation check valve. The housing and the rotor define at least one vane which separate chambers, advanced and retard. The spool valve comprises a spool having a plurality of lands mounted within a bore in the rotor. The spool is slidable from an advance position through a holding position to a retard position. The phaser also has an advance exhaust passage, a retard exhaust passage, and a return passage to route operating fluid to the chambers. The recirculation check valve is in the return passage and only allows flow of fluid from the advance chamber into the return passage when the spool is in the retard position and fluid from the retard chamber into the return passage when the spool is in the advance position.